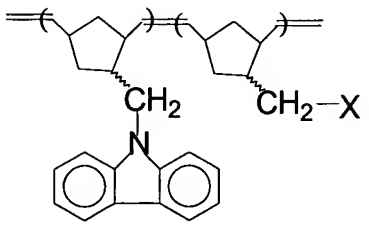
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the subject Patent Application:

Listing of Claims:

1. (Original) A diblock macroinitiator containing norborene and carbazole segments comprising the formula (I):

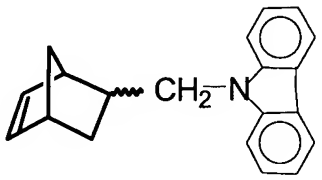


(I)

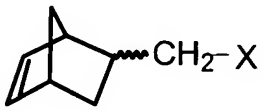
wherein, X is one selected from a group consisting of Br and Cl.

2. (Currently Amended) The diblock macroinitiator according to claim 1, wherein, said diblock macroinitiator is prepared from a mixture of cabazole-containing norbornene [[-type]] monomer (II) in the presence of catalyst *via* ring-opening metathesis polymerization, an additional norbornene dervative(III) is

added into the mixture after 15± [[~]]120 mins of commencing ring-opening metathesis polymerization and said diblock macroinitiator is obtained, wherein,



(II)

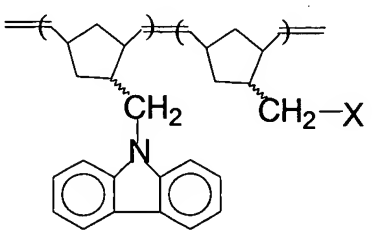


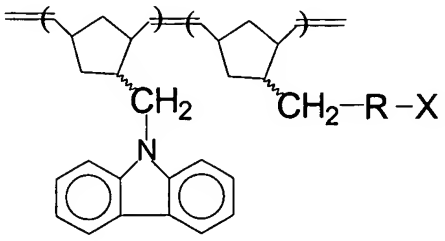
(III)

wherein, X is one selected from a group consisting of Br and Cl.

3. (Original) The diblock macroinitiator according to claim 2, wherein, said metathesis catalyst is $\{Cl_2Ru(CHPh)[P(C_6H_{11})_3]_2\}$.

4. (Original) A polynorbornene-containing grafted copolymer comprising the formula (IA), which is prepared by using a diblock macroinitiator with the formula (I):

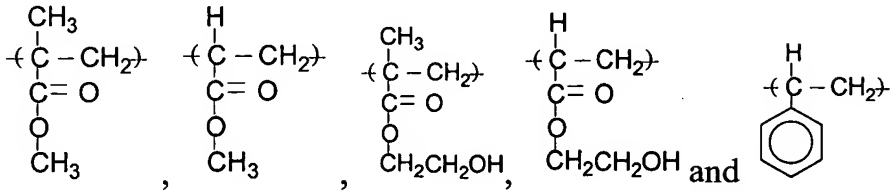




(I) (IA)

wherein, X is one selected from a group consisting of Br and Cl; and

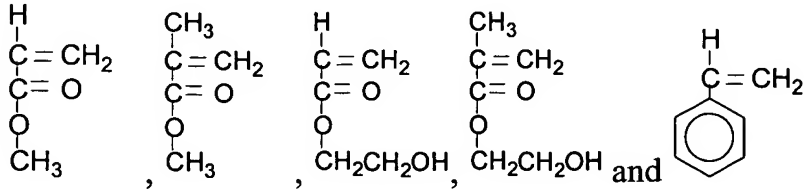
R is one selected from a group consisting of



5. (Currently Amended) A method for preparing a grafted polynorbornene with the formula (IA) comprises of following steps :

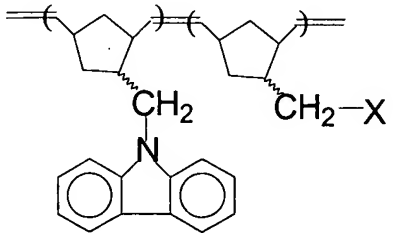
a)Preparation of a macroinitiator with the formula (I) by means of reaction of cabazole-containing norbornene [[-type]] monomer (II) and a catalyst *via* ring-opening metathesis polymerization and addition of additional norbornene derivative(III) into the mixture after 15~120 mins of commencing ring-opening metathesis polymerization;

b)preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (I) and a monomer selected from a group consisting of

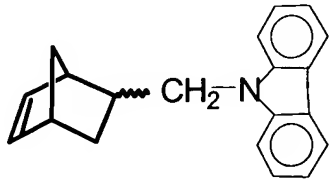


; and

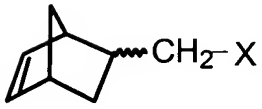
c) preparation of said grafted polynorbornene copolymer with the formula (IA) by means of a graft copolymerization of said mixture at various temperatures ranged from 50 to 150 ^{o}C, wherein,



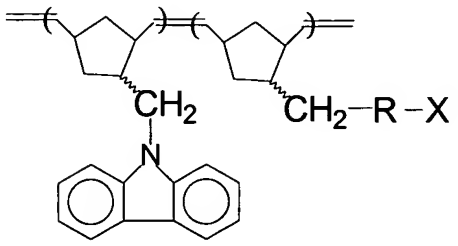
(I)



(II)



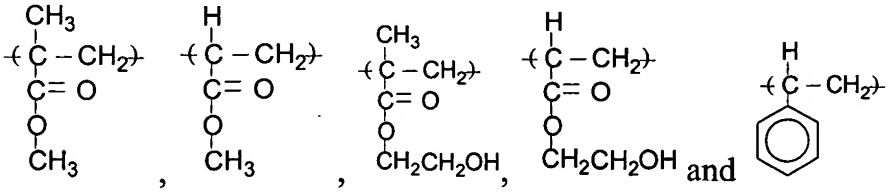
(III)



(IA)

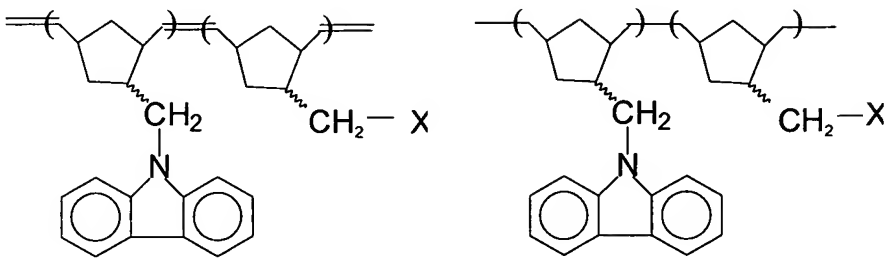
wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of



and

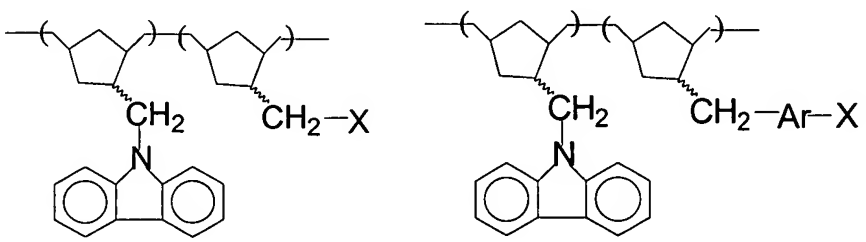
6. (Withdrawn) A thermally-stable saturated cyclic aliphatic diblock macroinitiator comprising the formula (IV), which is prepared by hydrogenating a diblock macroinitiator with the formula (I):



(I) (IV)

wherein, X is one selected from a group consisting of Br and Cl.

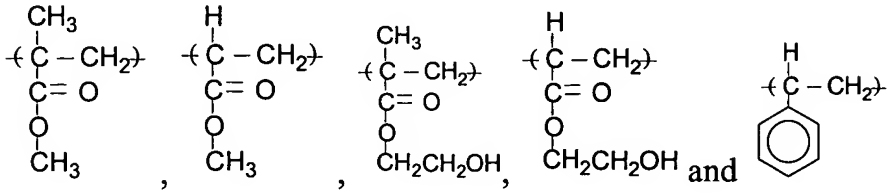
7. (Withdrawn) A polynorbornene-containing grafted copolymer comprising the formula (IVA), which is prepared by graft copolymerization by using a diblock macroinitiator with the formula (IV):



(□) (□A)

wherein, X is one selected from a group consisting of Br and Cl; and

Ar is one selected from a group consisting of

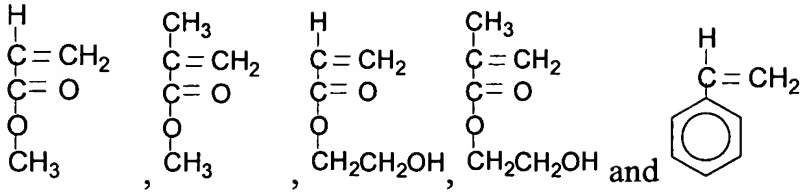


8. (Withdrawn) A Method for preparing a grafted polynorbornene with the formula (IVA) comprises of following steps:

a) Preparation of a macroinitiator with the formula (I) by means of reaction of cabazole-containing norbornene-type monomer (II) and a catalyst *via* ring-opening metathesis polymerization and an additional norbornene dervative(III) was added into the mixture after 15~120 mins commencing of ring-opening metathesis polymerization;

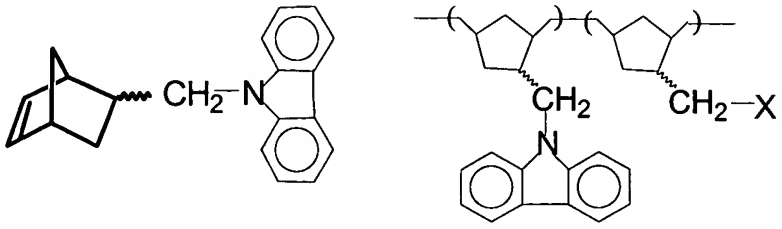
b) hydrogenation of said diblock macroinitiator with the formula (I) to prepare a thermally-stable saturated cyclic aliphatic diblock macroinitiator with the formula (IV);

c) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said thermally-stable saturated cyclic aliphatic diblock macroinitiator (IV) and a monomer selected from a group consisting of

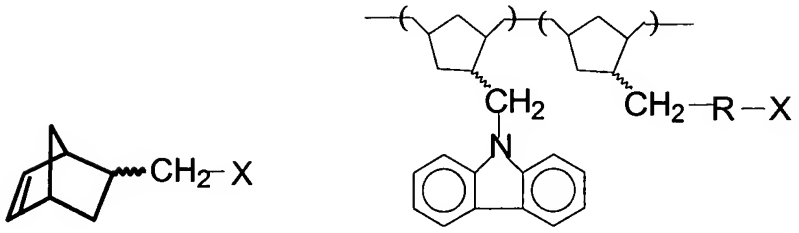


; and

d) preparation of said grafted polynorbornene copolymer with the formula (IVA) by means of a graft copolymerization of said mixture at various temperatures ranged from 50 to 150 ^{o}C, wherein,



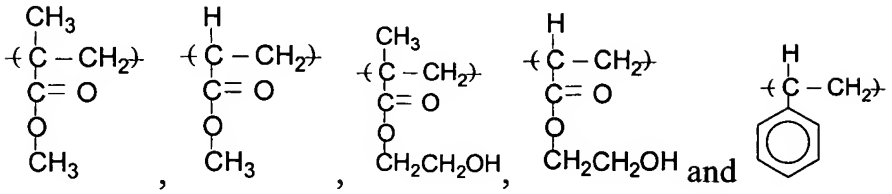
(II) (□-1)



(III) (□-1A)

wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of

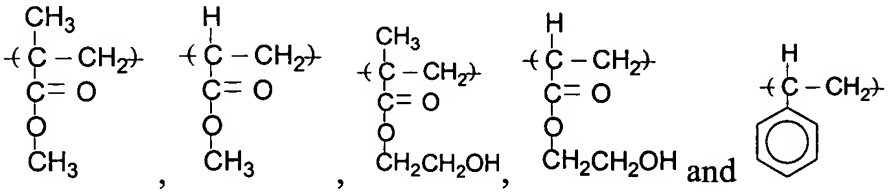


9. (Withdrawn) A norbornene-containing macrmonomer comprising the formula (V), which is prepared by using a norbornene end group-containing initiator with the formula (III):

(III) (□)

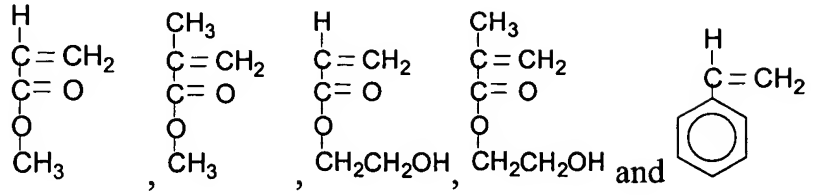
wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of



10. (Withdrawn) A method for preparing a norbornene end group-containing macrmonomer with the formula (V) comprises of following steps:

a) Preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, a norbornene-type initiator (III) and a monomer selected from a group consisting of



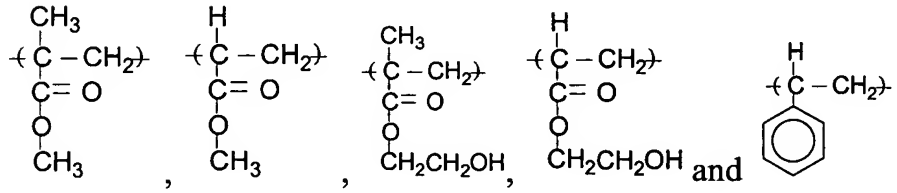
; and

b) preparation of said norbornene end group-containing macromonomer with the formula (V) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 ^{o}C, wherein,

(III) (□)

wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of



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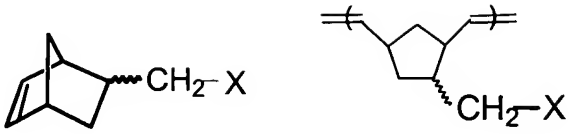
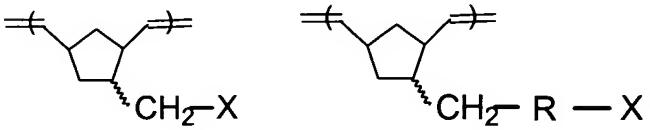
11. (Withdrawn) A norbornene-type macroinitiator comprising the formula (VI), which is prepared by using a catalyst and a norbornene-type dervative with the formula (III) *via* ring-opening metathesis polymerization:



(III) (□I)

wherein, X is one selected from a group consisting of Br and Cl.

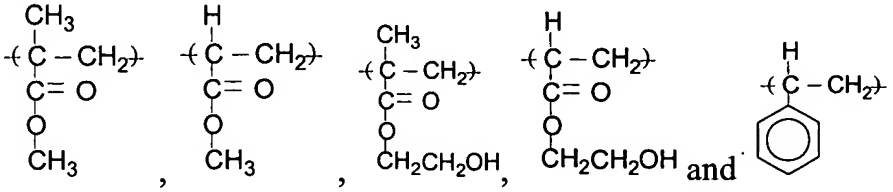
12. (Withdrawn) A polynorbornene-containing grafted copolymer comprising the formula (VII), which is prepared by using a macroinitiator with the formula (VI) *via* graft copolymerization :



(□) (□I)

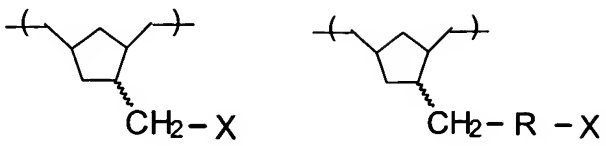
wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of



13. (Withdrawn) A saturated cyclic aliphatic polynorbornene-containing grafted copolymer comprising the formula (IX), which is prepared by using a

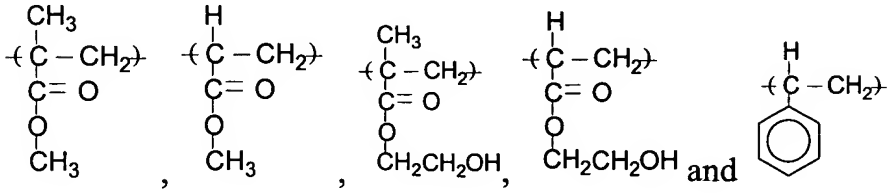
saturated cyclic aliphatic macroinitiator with the formula (VIII) *via* graft copolymerization :



(VIII) (□)

wherein, X is one selected from a group consisting of Br and Cl; and

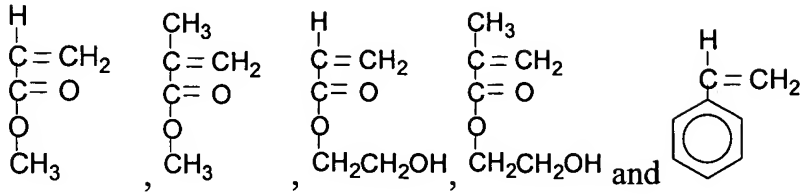
R is one selected from a group consisting of



14. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (VII) comprises of following steps:

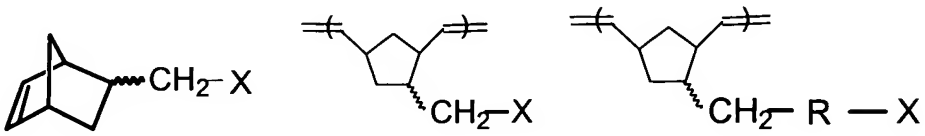
a) Polymerization a norbornene monomer with the formula (III) by using a catalyst *via* ring-opening metathesis polymerization, to obtain a macroinitiator with the formula (VI);

b) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (VI) and a monomer selected from a group consisting of



; and

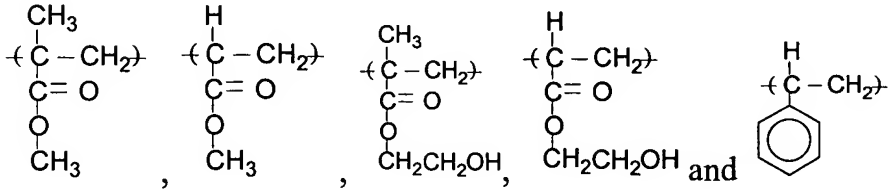
c) preparation of said grafted polynorbornene copolymer with the formula (VII) by means of a graft copolymerization of said mixture at various temperatures ranged from 70 to 150 ^{o}C, wherein,



(III) (□) (□)

wherein, X is one selected from a group consisting of Br and Cl; and

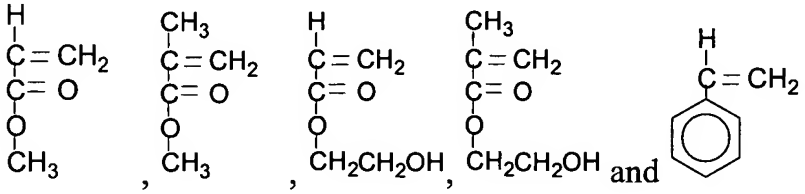
R is one selected from a group consisting of



15. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (IX) comprises of following steps:

a) Polymerization of a norbornene monomer with the formula (III) by using a catalyst *via* ring-opening metathesis polymerization, to obtain a macroinitiator with the formula (VI);

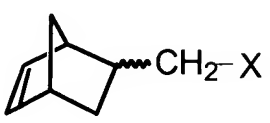
b) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (VI) and a monomer selected from a group consisting of



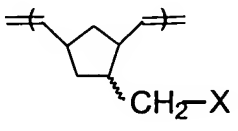
;

c) hydrogenation of said macroinitiator with the formula (VII) to prepare a thermally-stable saturated cyclic aliphatic macroinitiator with the formula (VIII); and

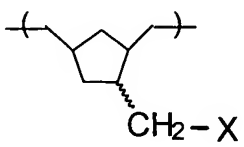
d) preparation of a grafted polynorbornene with the formula (IX) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 ^{O}C, wherein,

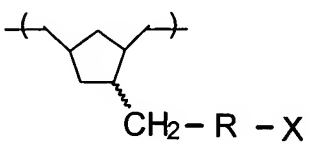


(III)



(□)

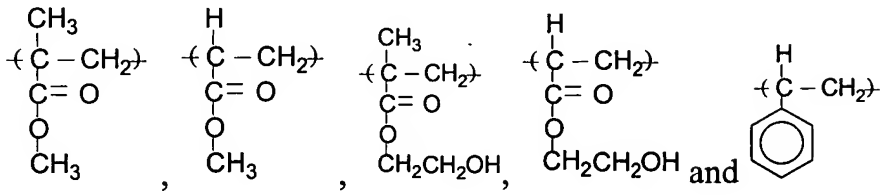




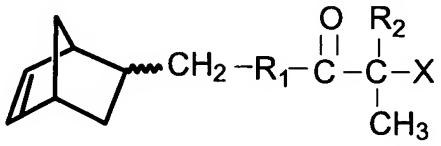
(□II) (□)

wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of



16. (Withdrawn) A norbornene-type compound containing bromo-end group, having the formula (XI):



(XI)

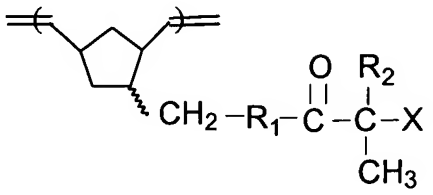
wherein, X is Br or Cl ;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

wherein, n denotes an integer of 1 to 4; and

R_2 is H or -CH_3.

17. (Withdrawn) A polynorbornene-type macroinitiator containing halogen-side group, having the formula (XII):



(XII)

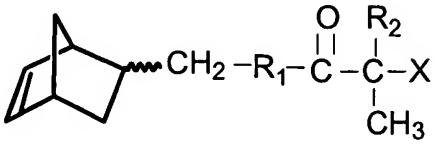
wherein, X is Br or Cl ;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

wherein, n denotes an integer of 1 to 4.; and

R_2 is H or -CH_3 . .

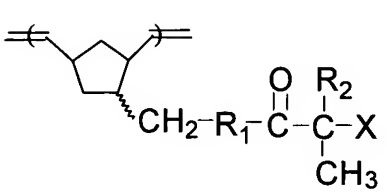
18. (Withdrawn) The macroinitiator according to claim 17, wherein, said macroinitiator is prepared from a halogen-containing norbornene-type compound (XI) in the presence of catalyst *via* ring-opening metathesis polymerization, wherein, .



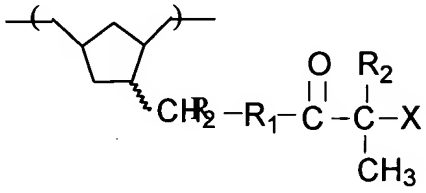
(XI)

19. (Withdrawn) The macroinitiator according to claim 18, wherein, said metathesis catalyst is $\{Cl_2Ru(CHPh)[P(C_6H_{11})_3]_2\}$.

20. (Withdrawn) A thermally-stable saturated cyclic aliphatic macroinitiator comprising the formula (XIII), which is prepared by hydrogenating a macroinitiator with the formula (XII):



(XII)



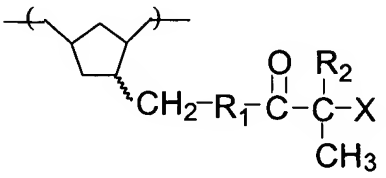
(XIII)

wherein, X is Br or Cl ;

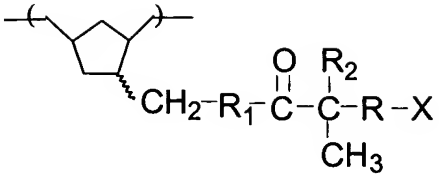
R_1 is -NH- , -O- , $-(CH_2)n-NH-$ or $-(CH_2)n-O-$, wherein, n denotes an integer of 1 to 4 ; and

R_2 is H or $-CH_3$.

21. (Withdrawn) A grafted polynorbornene copolymer comprising the formula (XIV), which is prepared by using a macroinitiator with the formula (XIII) *via* graft copolymerization:



(XIII)



(XIV)

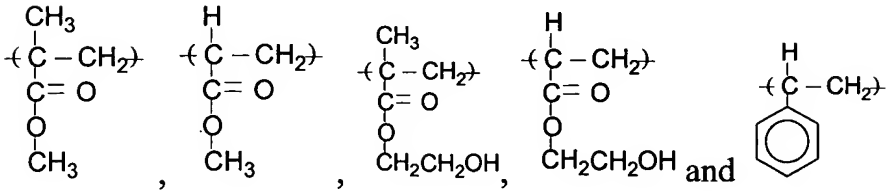
wherein, X is Br or Cl;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

wherein, n denotes an integer of 1 to 4 ;

R_2 is H or -CH_3; and

R is one selected from a group consisting of

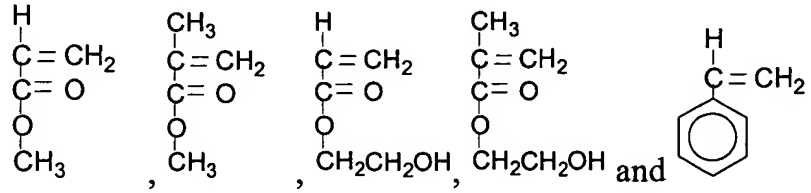


22. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (XIV) comprises of following steps:

a) Polymerization of a norbornene monomer with the formula (XI) by using a catalyst *via* ring-opening metathesis polymerization to obtain a macroinitiator with the formula (XII);

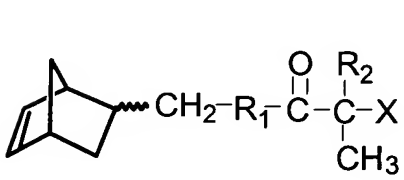
b) hydrogenation of said macroinitiator with the formula (VII) to prepare a thermally-stable saturated cyclic aliphatic macroinitiator with the formula (VIII);

c) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said thermally-stable saturated cyclic aliphatic macroinitiator (VIII) and a monomer selected from a group consisting of

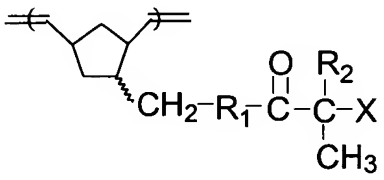


; and

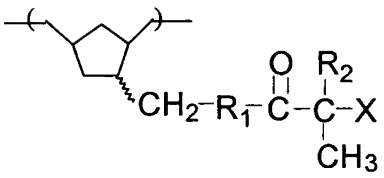
d) preparation of a grafted polynorbornene with the formula (XIV) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 ^{O}C, wherein,



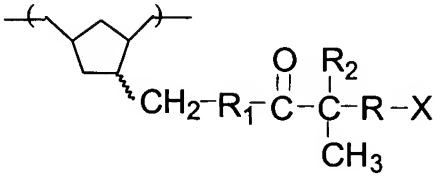
(XI)



(XII)



(XIII)



(XIV)

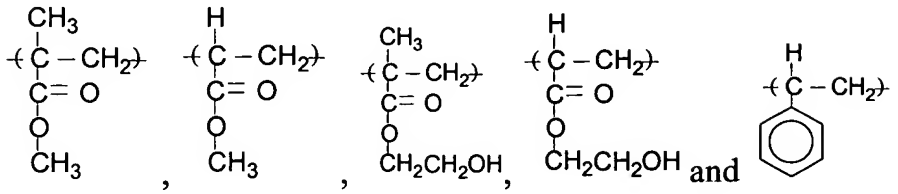
wherein, X is Br or Cl;

R_1 is -NH-, -O-, -(CH_2)n-NH- or -(CH_2)n-O-,

wherein, n denotes an integer of 1 to 4 ;

R_2 is H or -CH_3; and

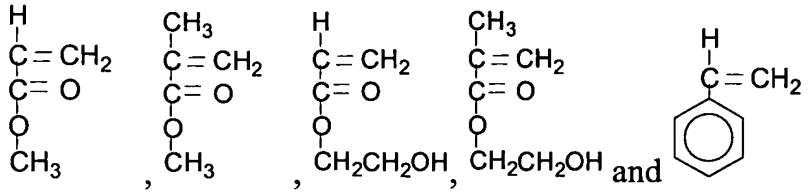
R is one selected from a group consisting of



23. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (XIVA) comprises of following steps:

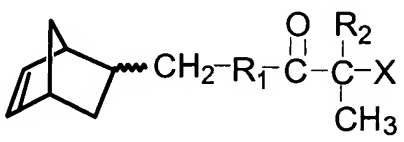
a) Polymerization of a norbornene monomer with the formula (XI) by using a catalyst *via* ring-opening metathesis polymerization, to obtain a macroinitiator with the formula (XII);

b) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (VII) and a monomer selected from a group consisting of

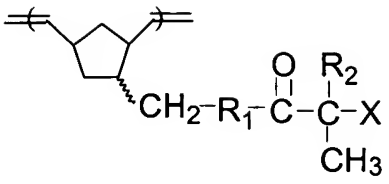


; and

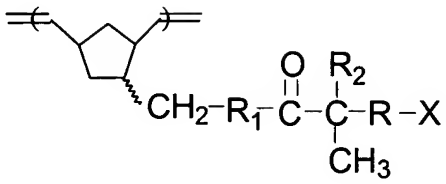
c) preparation of a grafted polynorbornene with the formula (XIVA) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 ^{O}C, wherein,



(XI)



(XII)



(XIVA)

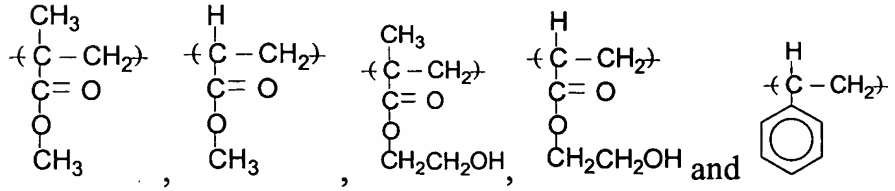
wherein, X is Br or Cl;

R_1 is -NH- , -O- , $-(CH_2)_n$-NH- , or $-(CH_2)_n$-O-,

wherein, n denotes an integer of 1 to 4 ;

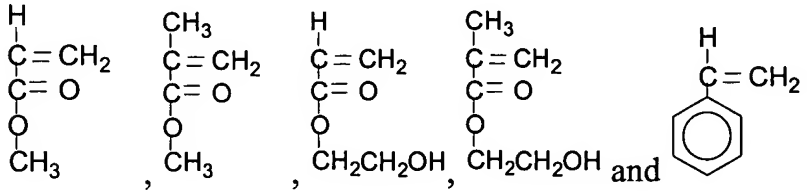
R_2 is H or $-CH_3$; and

R is one selected from a group consisting of



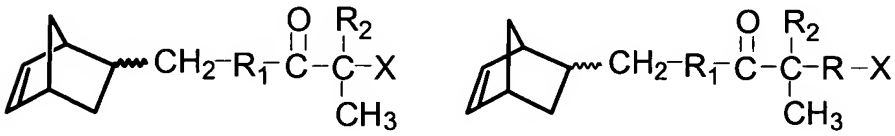
24. (Withdrawn) A method for preparing norbornene end group-containing macromonomer with the formula (XV) comprises of following steps:

a) Preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, a norbornene dervative (XI) and a monomer selected from a group consisting of



; and

b) preparation of a norbornene end group-containing macromonomer with the formula (XV) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 ^{O}C, wherein,



(XI) (XV)

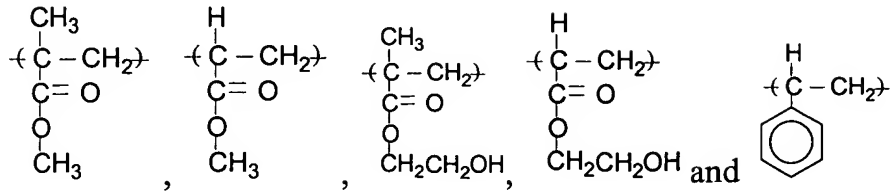
wherein, X is Br or Cl;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

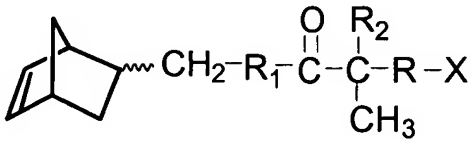
wherein, n denotes an integer of 1 to 4 ;

R_2 is H or -CH_3; and

R is one selected from a group consisting of



25. (Withdrawn) A norbornene end group-containing macromonomer comprises of formula (XV):



(XV)

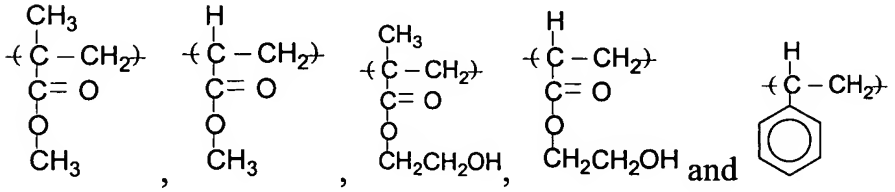
wherein, X is Br or Cl;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

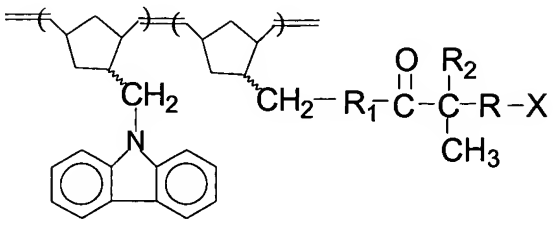
wherein, n denotes an integer of 1 to 4 ;

R_2 is H or -CH_3; and

R is one selected from a group consisting of



26. (Withdrawn) A copolymer containing carbazole and halo- side groups comprising the formula (XVI):



(XVI)

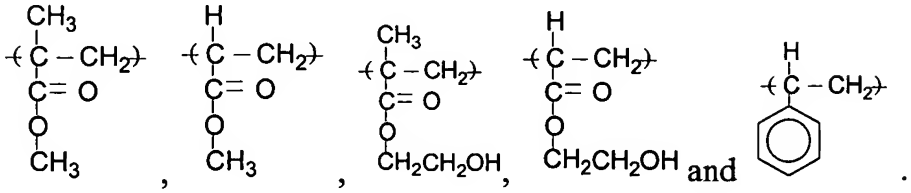
wherein, X is Br or Cl;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

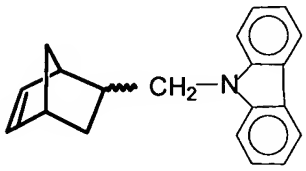
wherein, n denotes an integer of 1 to 4 ;

R_2 is H or -CH_3; and

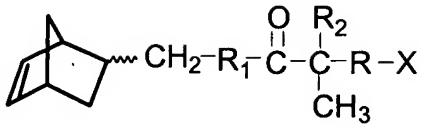
R is one selected from a group consisting of



27. (Withdrawn) The copolymer according to claim 26, wherein, said copolymer macroinitiator is prepared from a mixture of cabazole-containing norbornene-type monomer (II) and a macromonomer with the formula (XV) in the presence of catalyst *via* ring-opening metathesis polymerization, wherein,



(II)



(XV)

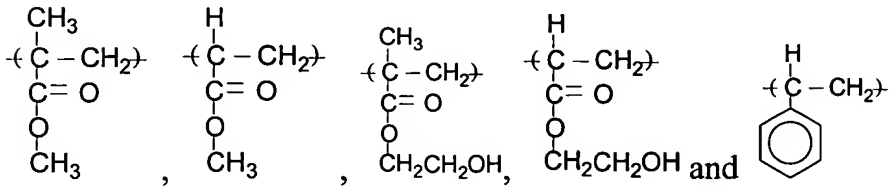
wherein, X is Br or Cl;

R_1 is -NH- , -O- , -(CH_2)n-NH- , or -(CH_2)n-O-,

wherein, n denotes an integer of 1 to 4 ;

R_2 is H or -CH_3; and

R is one selected from a group consisting of



and